between the forming rail and the servo and driven by the servo to change the height of the forming rail in a step-wise manner.

34. (New) The method according to claim 22, further comprising a stepper element having multiple steps of differing heights disposed between the forming rail and the servo and driven by the servo to change the height of the forming rail in a step-wise manner.

A marked-up version of the above amended claims is provided after the following remarks.

Remarks

1. Provisional Obvious Type Double Patenting Rejections

Claims 1, 4-11, 14-22 and 25-31 were provisionally rejected under the non-statutory doctrine of obvious type double patenting as claiming an invention patentably indistinct from claims in co-owned and co-pending U.S. patent application Ser. No. 09/652,236.

Applicants submit herewith the enclosed terminal disclaimer under 37 C.F.R. § 1.321(c) (the required $110.00 fee for the terminal disclaimer may be charged to the above account). As stated and qualified therein, Applicants disclaim the terminal part of the statutory term of any patent granted on this application which would extend beyond the expiration date of the full statutory term of the cited patents.

2. Obviousness Rejections

Claims 1, 4-11, 14-22 and 25-31 are currently pending and were rejected under 35 U.S.C. § 103(a) in view of Kuroyone (U.S. patent 5,462,424), Takahashi et al. (U.S. patent 5,299,351), Koseko et al. (U.S. patent 5,603,871) and Narushima et al. (U.S. patent 6,341,516). In response, claims 1, 11 and 22 (and thus all pending claims) are hereby amended to recite that the forming rail is coupled to a servo controllable by the press controller to change the height of

the forming rail based on the critical dimension measurement from the sensor. New claims 32-34 (depending from claims 1, 1 and 22 respectively) further add a stepper element having multiple steps of differing heights disposed between the forming rail and the servo and driven by the servo to change the height of the forming rail in a step-wise manner. No new matter is introduced by the amendment to the claims, since the amended recitations are fully supported in the specification and the drawings (see e.g. page 11, lines 8-17 and Fig. 9).

None of the several prior art references, alone or combined, teach using part dimension data detected by a sensor to adjust the height of a forming rail nor to operate a stepped element to move the forming rail in a step-wise fashion to form a critical dimension of the part, particularly in which the upper die includes a knocker element that contacts the rail. Reconsideration of the amended claims is thus respectfully requested in light of the following remarks.

None of the references teach of the use of a stepped element, particularly one controlled by a servo and disposed between the servo and a forming portion of a die. The stepped member provides pre-set incremental positioning of the forming rail as is desired to achieve various predetermined part formations, such as various bend angles. The stepped member also provides an intermediate element between the forming rail and servo, which mitigates the effects on the servo of impact to the forming rail, thus increasing the life of the servo and the accuracy of the press. The large, flat steps of the stepped element will absorb forces from the impacted forming rail much better than angled or toothed arrangements.

While the Kuroyone reference does not specifically teach controlling the position of a forming rail, it does teach using servos 128a and 128b to control the positioning of guide members 121 and 122 based on readings from part sensors 185 and 186. However, these guide members are pivotally driven to change the angle of surfaces 121a and 122a by worm gear arrangements coupled to the servos. No stepped element is used, nor is the height of the guide member changed at all, nonetheless in step-wise fashion.

None of the other references of record fill in the deficiencies of Kuroyone and thus the cited references are therefore believed to be insufficient to render the invention of independent claims 1, 11 and 22 obvious. The pending dependent claims are believed non-obvious for the same reasons. In addition, none of the art teaches the sensor signal manipulation and timing of the dependent claims, such as claims 6-10. Thus, these claims are believed non-obvious for these additional reasons.

Applicants respectfully request that this response be entered into the application and that the application be allowed to issue.

Applicants have previously paid for 31 claims. With the three new claims (claims 32-34) and the previously cancelled six claims (claims 2, 3, 12, 13, 23 and 24), the total number of pending claims is 28. Thus, no fees are required for the new claims. Please charge the $740.00 RCE fee, the $110.00 terminal disclaimer fee and the $920.00 fee for the 3-month time extension petition (enclosed), and any other fees deemed necessary, to Deposit Account No. 17-0055.

Respectfully submitted,

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Date: 12/19/2002

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Marked Up Version of Amendments – 09/652,197

Please amend claims 1, 11 and 22 and add new claims 32-34 as follows:

--1. (Twice Amended) A part measurement system comprising:

a press machine including a lower die coupled to an upper die, wherein the lower die includes a top surface supporting a strip of material to be formed into a part after a stripper plate coupled to the upper die contacts the strip of material;

a part measurement sensor located in the lower die, wherein the sensor measures a critical dimension of the part while the part is in the lower die;

a part forming rail coupled to the lower die, wherein the forming rail and the upper die form the critical dimension of the part; and

a press controller coupled to the press machine and the sensor, wherein the controller processes a measurement signal from the part measurement sensor of the critical dimension of the part, compares the measurement signal to a predetermined threshold value, and generates a command signal to the press machine to adjust the forming rail based on the measurement signal;

wherein the forming rail is coupled to a servo [and the] controllable by the press controller [adjusts the servo] to change the height of the forming rail based on the measurement from the sensor of the critical dimension of the part and further wherein the upper die includes a knocker that contacts the forming rail to form the critical dimension of the part.

11. (Twice Amended) A part measurement system comprising:

a press machine including a lower die coupled to an upper die, wherein the lower die includes a top surface supporting a strip of material to be formed into a part after a stripper plate coupled to the upper die contacts the strip of material;

a part measurement sensor located in the lower die, wherein the sensor measures a critical dimension of the part;

a part forming rail coupled to the lower die, wherein the forming rail and the upper die form the critical dimension of the part; and

a press controller coupled to the press machine and the sensor, wherein the controller processes a measurement signal from the part measurement sensor of the critical dimension of the part, compares the measurement signal to a predetermined threshold value, and generates a command signal to the press machine to adjust the forming rail based on the measurement signal;

wherein the forming rail is coupled to a servo [and the] controllable by the press controller [adjusts the servo] to change the height of the forming rail based on the measurement from the sensor of the critical dimension of the part and further wherein the upper die includes a knocker that contacts the forming rail to form the critical dimension of the part.

22. (Twice Amended) A method of measuring a critical dimension of a part in a press machine, the method including the steps of:

feeding a strip of material through the press machine, wherein the machine includes a lower die coupled to an upper die and the lower die includes a top surface supporting the strip of material;

forming the strip of material into the part, wherein a stripper plate coupled to the upper die contacts the strip of material and the upper die punches the strip of material;

measuring the critical dimension of the part with a part measurement sensor located in the lower die;

processing a measurement signal from the part measurement sensor of the critical dimension of the part, wherein a press controller compares the measurement signal to a predetermined threshold value, and generates a command signal to the press machine; and

adjusting a forming rail coupled to the lower die based on the command signal from the press controller;

wherein the forming rail is coupled to a servo [and the] controllable by the press controller [adjusts the servo] to change the height of the forming rail based on the measurement from the sensor of the critical dimension of the part and further wherein the upper die includes a knocker that contacts the forming rail to form the critical dimension of the part.

32. (New) The measurement system according to claim 1, further comprising a stepper element having multiple steps of differing heights disposed between the forming rail and the servo and driven by the servo to change the height of the forming rail in a step-wise manner.

33. (New) The measurement system according to claim 11, further comprising a stepper element having multiple steps of differing heights disposed between the forming rail and the servo and driven by the servo to change the height of the forming rail in a step-wise manner.

34. (New) The method according to claim 22, further comprising a stepper element having multiple steps of differing heights disposed between the forming rail and the servo and driven by the servo to change the height of the forming rail in a step-wise manner.--